CLATRONIC CTV270

MODEL

SERVICE MANUAL

SKYWORTH ELECTRONICS CO., LTD

CTV-8148GP

CTV-8208GP

SAFETY TEST AND ALIGNMENT INSTRUCTION

FOR : PAL/BG W/FTZ

PREPARED BY :
APPROVED BY :
DATE : 3 DEC 1993
REVISION DATE :

X-RAY RADIATION PRECAUTION

1) Excessive high voltage can produce potentially hazardous X-Ray Radiation. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage of this receiver is 26KV at zereo beam current (minimum brightness) under 220V AC power source. Thc high voltage must not, under any circumstances, excced 28KV.

2) Each time a receiver requires servicing, the high voltage should be checked following the High Voltage Check procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.

3) The primary source of X-Ray Radiation in this TV Receiver is the picture tube. For continued X-Ray Radiation protection, the replacement tube must be exactly the same type tube as specified in the parts list.

4) Some parts in this receiver have special safety - related characteristics for X-Ray Radiation protection. For continued safety, parts replacement should be undertaken only after referring to the Product Safety Notice.

SAFETY PRECAUTION

Warning : Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver.

The following are the necessary precautions to be observed before servicing this chassis.

1) Since the power supply circuit of this receiver is directly connected to the AC power line, an isolation transformer should be used during any dynamic service to avoid possible shock hazard.

2) Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.

3) When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as : non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.

4) When replacing parts or circuit boards, disconnect the power cord.

5) When replacing a high wattage resistor (Metal oxide film resistor) on circuit board, keep the resistor 10mm (1/2 in.) away from circuit board.

6) Connection wires must be kept away from components with high voltage or high temperature.

7) If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.

8) The receiver is designed to operate with 220V (50Hz) AC mains.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a vsual inspection and the X-Ray Radiation protection afforded by them cannot necessarily be obtained by using replacement components rated for high wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are shaded on the schematic diagram and the part list.

' fore replacing any of these components, read the parts list in this ...anual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-Ray Radiation or other hazards.

GENERAL ADJUSTMENT INSTRUCTION

This receiver is transistorized and special care should be taken when servicing. Read the following matters that demand special attention before attempting adjustment.

1) Adjustment requires an exact procedure and should be undertaken only when necessary.

2) An isolation transformer should be used during any dynamic service to avoid possible shock hazard.

3) The test equipment specified or its equivalent is required to perform the alignment properly. Use of equipment which does not meet these requirements may result in improper alignment.

4) Correct matching of the equipment is essential. Failure to use proper matching will result in responses which can not represent the ture operation of the receiver.

5) The AC power line voltage should be kept 215 to 235 volts 50Hz during alignment.

6) Do not attempt to connect or disconnect any wire while the receiver is in operation. Make sure the power cord is disconnected before replacing parts in the receiver.

7) Unless otherwise noted, do not perform any adjustment until the receiver has been turned on for at least 10 minutes.

ALIGNMENT INSTRUCTION

A. PLEASE READ BEFORE ATTEMPTING SERVICE

1) Do not connect any antenna plug directly to the tuner socket and do not connect any equipments directly to the TV chassis, otherwise it may be burnt out the TV or equipment, except an isolation transformer is used for main power source of the TV sets.

2) Never disconnect any leads while receiver is in operation.

3) Disconnect all power before attempting any repairs.

4) Do not short any portion of the circuit while power is on.

5) For safety reasons, all parts replaced should be identical, (for parts and part numbers see parts list).

6) Before alignment the set must be pre-heated for 30 minutes or more and erase magnetism thoroughly from CRT front chassis frame by erase coil.

B. TEST EQUIPMENT

1) VIF Sweep Generator

2) AM/FM Signal Generator

3) DC Power Supply (16V)

4) Oscilloscope

5) Volt meter

6) High Voltage Meter

7) Demagnetizing Coil

8) Philips Pattern Generator

9) Audio Generator

C. PICTURE I. F. ALIGNMENT

1) Set sweep generator marker to 31.9MHz, 33.4MHz, 34.47MHz, 37.9MHz, 38.9MHz, 40.4MHz, modulation output level 60dB.

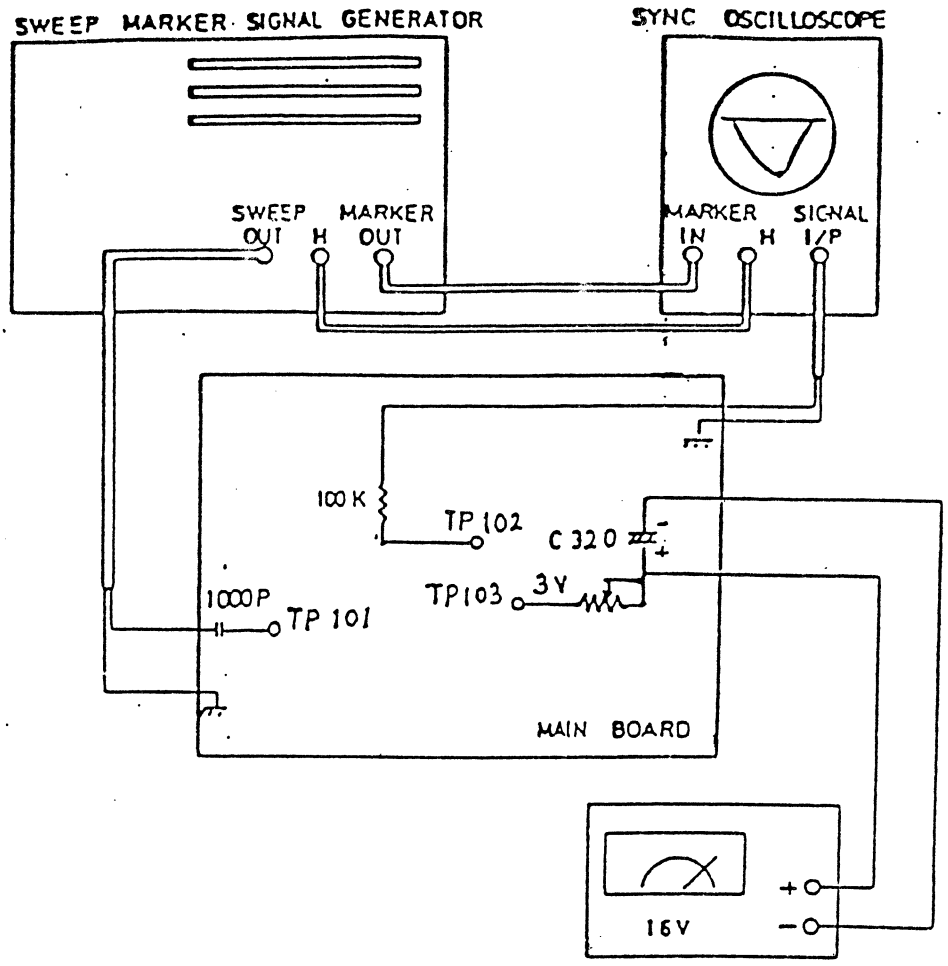
2) Connect the signal output of Sweep/Marker Generator to the TP101 (Pin 5 of IC101) through 1000PF capacitor.

3) Connect the vertical input terminal of Sync Oscilloscope in series with a 100K Ohm resistor to TP102 (Pin 18 of IC101).

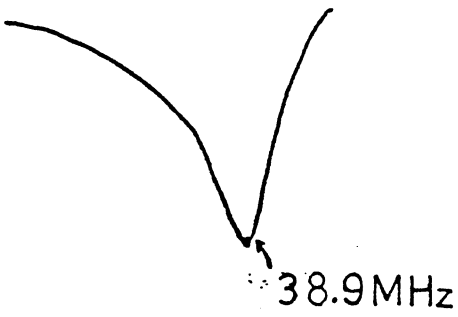
4) Apply a +16V DC across C320.

5) Apply a +3.5V DC dummy AGC bias to TP103 (Pin 24 of IC101). As shown in Fig 1.

6) Adjust L106 to obtain maximum amplitude of response at 38.9MHz as shown in Fig 2.


SWEEP MARKER SIGNAL GENERATOR
SYNC OSCILLOSCOPE
SWEEP OUT
H
MARKER OUT
MARKER IN
H
SIGNAL I/P
100 K
TP 102
C 320
TP103
3V
1000P
TP 101
MAIN BOARD
16V
+
−
POWER SUPPLY

(Fig. 1)


38.9MHz

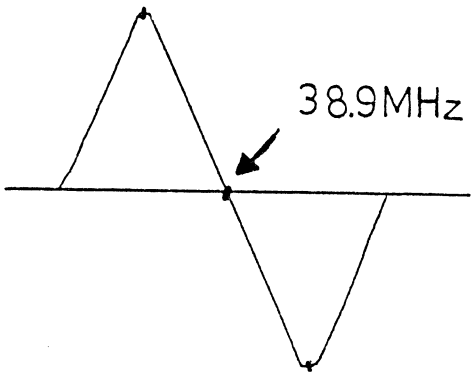
(FIG. 2)

D. AFC ALIGNMENT

1) Reconnect the vertical input of the Oscilloscope to TP104 (Pin 19 of IC101) and between 10K OHM resistor to ground.

2) Set the Oscilloscope maximum.

3) Adjust L107 for waveform as shown in Fig 3.



(FIG.3)

E. SIF ALIGNMENT

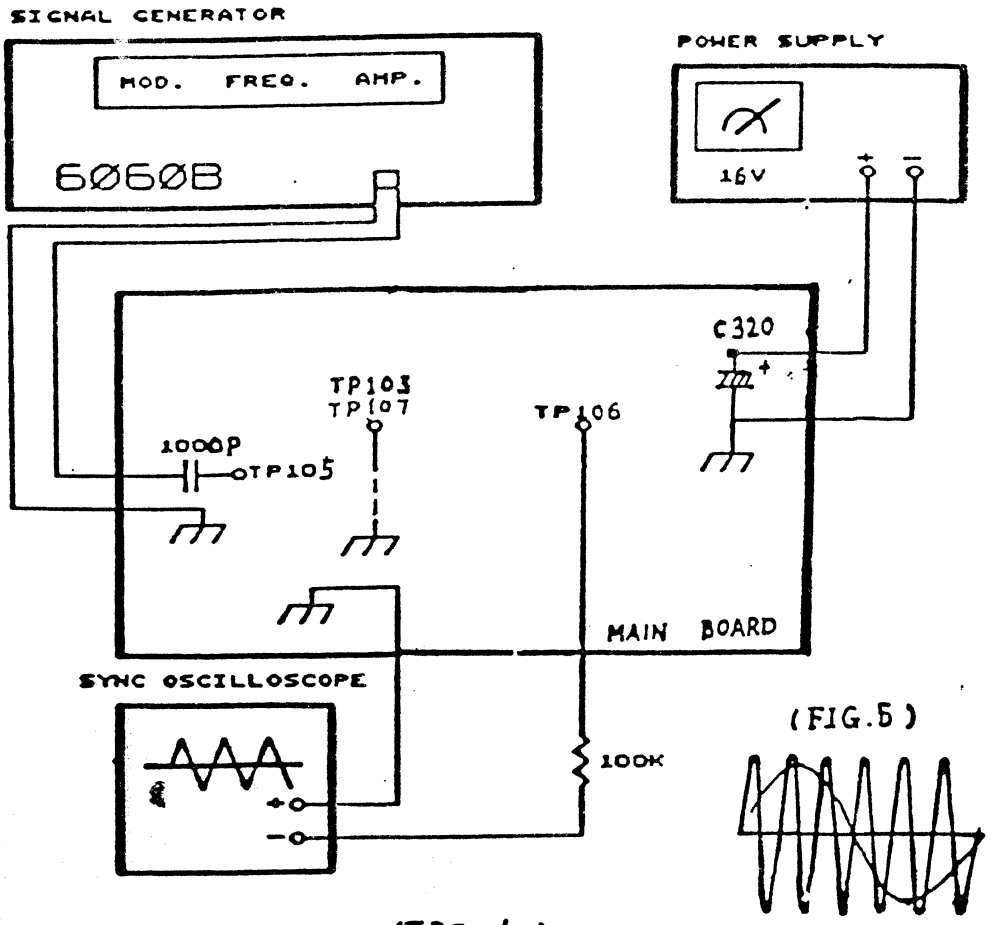
1) Set FM signal generator to 5.5MHz with AF 400Hz, 25KHz FM modulation output level 90-120dB. Apply this signal to TP105 through a 1000PF capacitor.

2) Short AGC TP103 (Pin 24 of IC101) and TP107 (Q110 "B") to Ground.

3) Connect the Oscilloscope input in series with a 100k Ohm resistor to TP106 (Pin 11 of IC101).

4) Apply a +16V DC across C320 as shown in Fig 4.

5) Adjust L112 to obtain a maximum amplitude signal output with minimum distortion.



(FIG. 4)

(FIG.5)

F. 30.9MHz AND 40.4MHz TRAPS ALIGNMENT

1) Connect the signal output of Sweep/Market Generator to the PIF output of tuner through 1000PF capacitor.

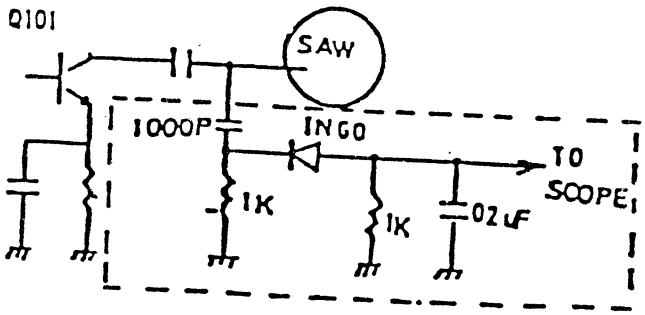
2) Signal output set to 100dB.

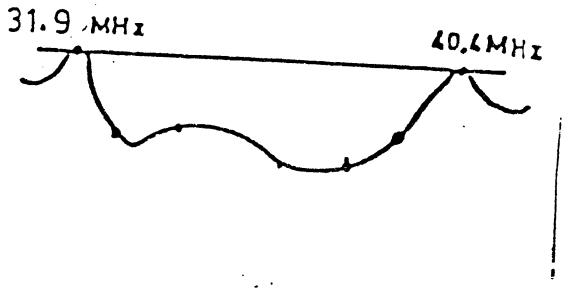
3) Connect the oscilloscope as shown as below.

4) Apply a +16V DC to C320 (Main P.C.B)

5) Turn L102 for 30.9MHz.

6) Turn L101 for 40.4MHz as shown as below.





GENERAL ADJUSTMENT

AUTOMATIC DEGAUSSING

1) An automatic degaussing coil is attached around the picture tube, degaussing the tube properly in about one second after the set is switched on. If the receiver is moved or faced in a different direction, the power must be switched off at least 15 minutes in order that the automatic degaussing circuit operates properly. External degaussing is necessary if the automatic degaussing proves ineffective after the set is moved. External degaussing is done by moving a degaussing coil circlewise in front of the face plate and then moving it away step by step until it is about two meters from the screen, then switch off the degaussing coil. If residual color spots are still found on the screen, adjust the color purity and convergence.

B + ADJUSTMENT

CAUTION : To avoid X-Ray hazards, B + voltage must be set correctly at 110V position.

Make sure the AC Power Supply is 220V, 50Hz.

2) Switch on the TV receiver, tune in an active channel and adjust brightness/contrast for maximum.

3) Adjust VR601 check the B+ voltage, 110V AT C321 with a reliable DC voltmeter.

HIGH VOLTAGE CHECK

CAUTION : There is no high voltage adjustment in this chassis, B + voltage directly relates to the high voltage, it must be properly adjusted to insure the correct high voltage. The high voltage must not exceed 28Kv under any conditions.

1) Connect an accurate high voltage meter to the second anode cap of the picture tube.

2) Turn on the receiver, set brightness and contrast controls to minimum. (Zerobeam current)

3) Make sure the high voltage does not exceed 28kV.

, No matter whether the luminance, contrast and chrominance controls are set to maximum or minimum, the high voltage must be kept under 28kV.

HEIGHT ADJUSTMENT

1) Receive the Philips Pattern signal.

2) Adjust the height control (VR202) to slightly overscan the screen.

OCUSING ADJUSTMENT

1) Receive the Philips Pattern signal.

2) Set the contrast control the the normal position.

3) Adjust focus control for a well-defined, sharpest display in the middle between center and side edge of the screen.

HORIZONTAL POSITION ADJUSTMENT

1) Receiver the Philips Pattern signal.

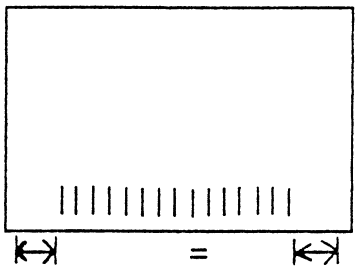
2) Adjust VR203 to change the horizontal position of the pattern for center.

ON-SCREEN POSITION ADJUSTMENT

1) Receive the Philips Pattern signal.

2) By pressing the PICTURE buttom.

3) Adjust on screen (VR001) for adjust the lettering to center of CRT.



(FIG. 6)

GENERAL ADJUSTMENT

A. PAL COLOUR DEMODULATOR ADJUSTMENT

1) Receive Philips Pattern.

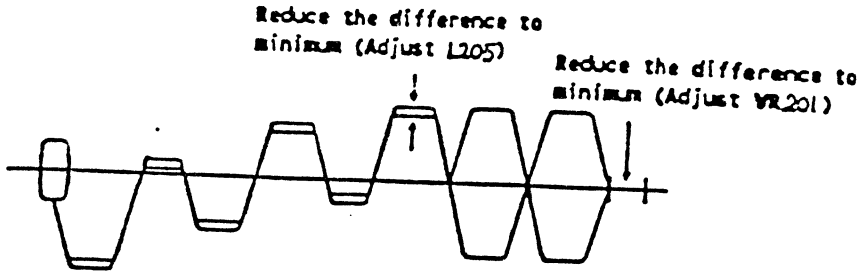
2) Set CONTRAST control to minimum position.

3) Set COLOUR control to maximum position.

4) Connect Oscilloscope to TP201 (B-out).

5) Adjust VR201 to obtrain the waveform as shown in Fig 7.

6) Adjust L205 to obtain the waveform as shown in Fig 7.



(FIG. 7)

B. WHITE BALANCE ADJUSTMENT

1) Receive the monoscope pattern.

2) Set the R.G.B. cut off controls (VR503, VR504, VR505) and the G.B. drive controls (VR501, VR502) at center position.

3) Rotate the screen control (on the FBT) fully counter clockwise. (minimum position)

4) Set the service switch (SW201) to 'Service' position.

5) Rotate the screen control gradually clockwise until the first horizontal line appears on the screen.

6) If the first horizontal line is in blue, adjust VR503, VR504 to increase the red and green component level to get a white horizontal line.

7) Reset the service switch (SW201) to 'Normal' position.
Set color to minimum.
Set brightness control to middle position.
Set contrast control to middle position.

8) Adjust drive controls (VR501, VR502) to maintain a good white balance at the brightest part of the screen.

9) Use white balance checker to fine adjust (VR503, VR504, VR505) at 25% brightness level and (VR501, VR502) at 75% brightness level.

C. SUB-BRIGHTNESS ADJUSTMENT

1) Receive the philips pattern signal.

2) Set the contract, brightness and colour controls to minimum position.

3) Adjust sub-brightness (VR204) until light just appears on the screen.

D. DELAY AGC ADJUSTMENT

1) Receive the signal of VHF High Channel.

2) Set input signal level at 60 +/-3dB.

3) ADjust AGC (VR101) control to point where noise is disappeared.

4) Increase input signal level to 100dB.

5) Check for normal picture, sound an sync.

COLOR PURITY AND CONVERGENCE ADJUSTMENT

A. COLOR PURITY ADJUSTMENT

NOTE : Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1) Demagnetize the picture tube and cabinet using a degaussing coil.

2) Turn the contrast and brightness controls to maximum.

3) Adjust Red and Blue controls (VR503) and (VR505); to provide only a green raster. Advance the Green Bias Control (VR504) if necessary.

4) Loosen the clamp screw holding the yoke backward to provide vertical green belt (zone) in the picture screen.

5) Remove the Rubber Wedges.

6) Rotate and spread the tabs of the purity magnet as shown in Fig 13 around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically.

7) Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.

8) Check the purity of the red and blue raster by adjusting the bias controls.

9) obtain a white raster, referring to white balance adjustment.

10) Proceed with convergence adjustment.

B. CONVERGENCE MAGNET ASSEMBLY POSITIONING

Convergence Magnet Assembly and Rubber Wedges need mechanical positioning as shown in Fig 11.

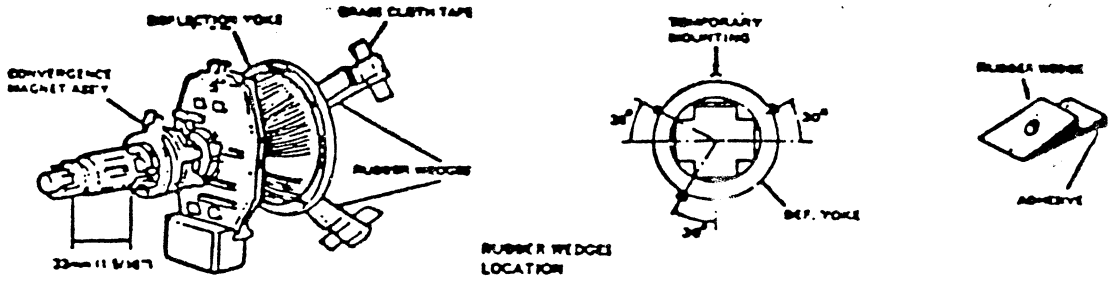


FIG. 11

CENTER CONVERGENCE ADJUSTMENT

NOTE : Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

1) Receive crosshatch pattern with a color bar signal generator.

2) Adjust the brightness and contrast controls for well defined pattern.

3) Adjust two tabs of the 4 Pole Magnets to change the angle between them as shown in Fig 12 and superimpose red and blue vertical lines in the center area of the picture screen as shown in Fig 13.

4) Turn both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the center of screen as shown in Fig 13.

5) Adjust two tabs of 6 Pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.

6) Repeat adjustment 3, 4, 5 keeping in mind red, green and blue movement, because 4 Pole Magnets and 6 Pole Magnets interact and make dot movement complex.

D. CIRCUMFERENCE CONVERGENCE ADJUSTMENT

NOTE : This adjustment requires Rubber Wedges and Glass Cloth Tapes.

1) Loosen the clamping screws of deflection yoke to allow the yoke to tilt.

2) Place a wedge . (Do not remove cover paper on adhesive part of the wedge).

3) Tilt front of the deflection yoke up or down to obtain better convergence in circumference as shown in Fig 13 Push the mounted wedge into the space between picture tube and the yoke to hold the yoke temporarily.

4) Place other wedge into bottom space and remove the cover part to stick.

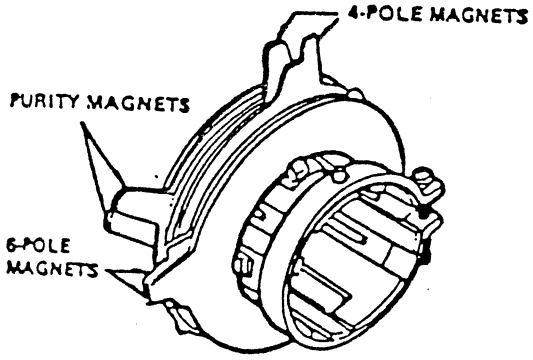
5) Tilt front of the yoke right or left to obtain better convergence in circumference as shown in Fig 13.

6) Hold the yoke position and put another wedge in either upper space, remove cover paper and stick the wedge on picture tube to hold the yoke.

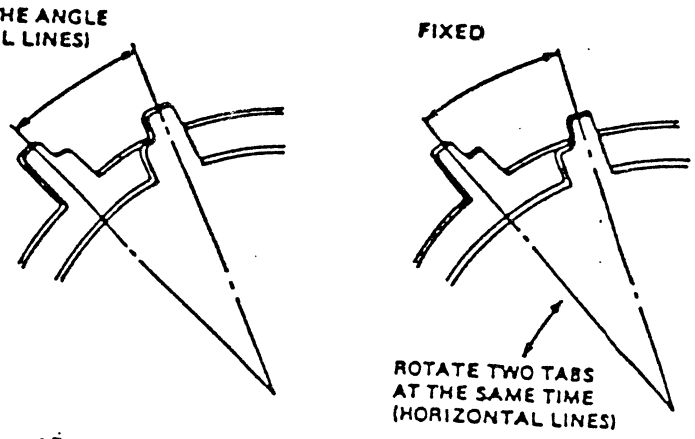
7) Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.

8) After placing three wedges, recheck over all convergence. Tighten the screw firmly to hold the yoke tightly in place.

9) Stick 3 grass cloth tapes on wedges as shown in Fig 11.



CONVERGENCE MAGNET ASSEMBLY



ADJUSTMENT OF MAGNETS

Fig. 12

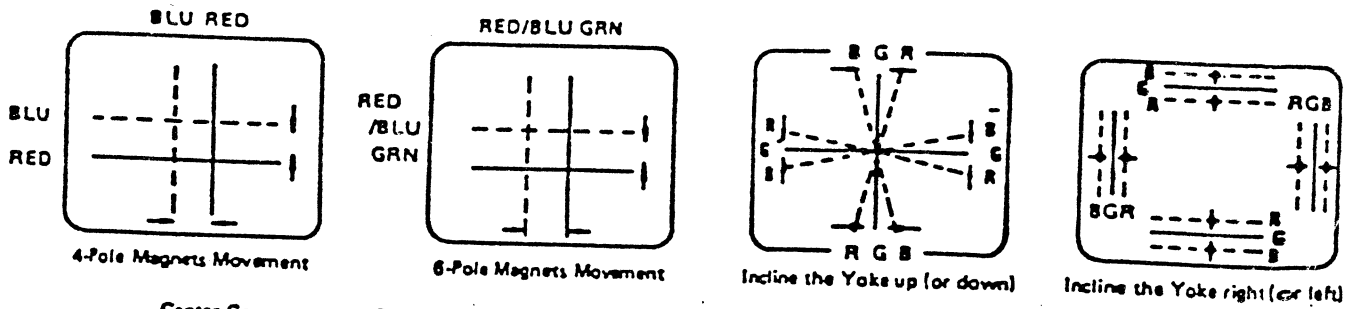
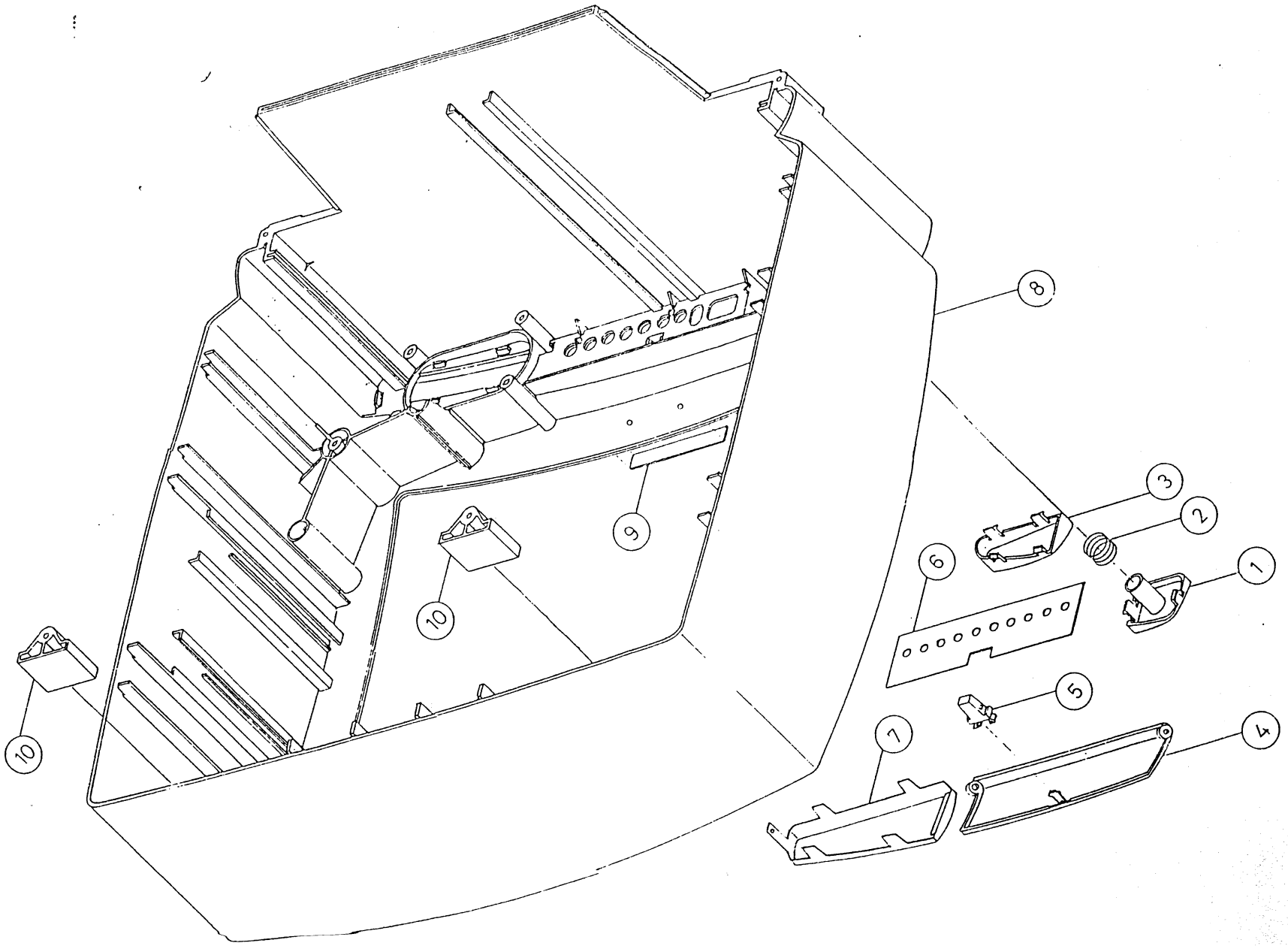


Fig.13 Dot Movement Pattern

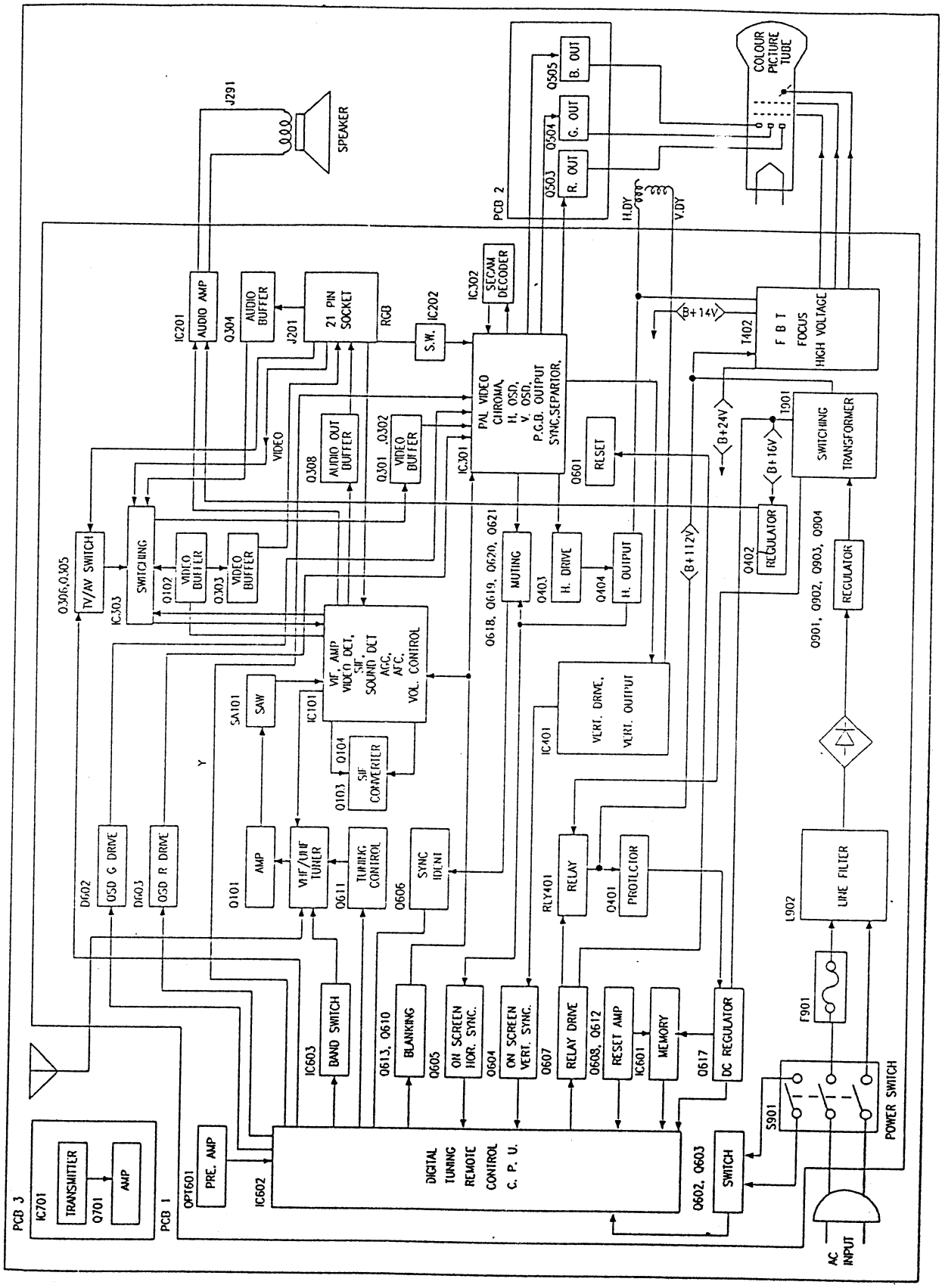
Geräte - Ersatzteilliste (ETQSTL) Datum : 18.04.94 Seite : 1

Gerätetyp : 262 CTV 262 PAL CTC CLATRONIC 37cm COLOR

ET-Nr.	Bezeichnung			Location	Anz.
826201	FERNBEDIENUNG	CTV 262			1
826219	IR VORVERSTÄRKER TFMS5380	CTV 262		M 001	1
826220	TUNER SHARP VTSS7S4	**** ERSATZ = 815911 ****			1
815911	TUNER UVE 33-W03=...W14	CTV 262 = SHARP VTSS7S4			1
826210	NETZSCHALTER MIT WISCHER	CTV 262		SW 601	1
823503	LAUTSPRECHER 8R-3W-2x3.5"	CTV 262			1
823512	FILTER OFW G1962M	CTV 262	SAW 101	SAW 101	1
825801	TREIBERTRAFO HOR. 04110N	CTV 262	T 301	T 301	1
826203	Z T R 51JE-051104-00	CTV 262	T 302	T 302	1
824403	TRENNTRAFO 3913-47=06110	CTV 262	T 603	T 603	1
824428	FILTER 190 404	CTV 262	L 101	L 101	1
824429	FILTER 193 191	CTV 262	L 102	L 102	1
824425	FILTER 203 89A PIF	CTV 262	L 106	L 106	1
826202	FILTER 213 80B AFC	CTV 262	L 107	L 107	1
:4424	FILTER 190 55A SIF	CTV 262	L 112	L 112	1
752033	IC M 34300 N 4 - 012 SP	CTV 262	IC 001	IC 001	1
751728	IC LA 7910	CTV 262	IC 003	IC 003	1
750006	Z-IC 7805 +5V	CTV 262	IC 005	IC 005	1
752357	IC TDA 8222	CTV 262	IC 101	IC 101	1
752231	IC TA 8659 AN TOSHIBA	CTV 262	IC 201	IC 201	1
750001	Z-IC 7812 +12V	CTV 262	IC 202	IC 202	1
752229	IC TA 8403 K	CTV 262	IC 301 **ODER**	IC 301	1
751706	IC LA 7830 SANYO	CTV 262	IC 301	IC 301	1
752330	IC TDA 1904	CTV 262	IC 401	IC 401	1
826211	KNOPF FÜR NETZSCHALTER	CTV 262		POS 1	1
822507	FEDER F.NETZSCHALTERKNOPF	CTV 262		POS 2	1
826212	BLENDE ROT V.IR EMPFÄNGER	CTV 262		POS 3	1
826207	BEDIENTEILKLAPPE DUN.GRAU	CTV 262		POS 4	1
826208	BEDIENTEILKLAPPE WEIß	CTV 262		POS 4	1
826209	BEDIENTEILKLAPPE ROT	CTV 262		POS 4	1
817132	SCHLIEßMECHANIK CTV 262			POS 5	1
826213	LAUTSPRECHERGITTER	CTV 262		POS 7	1
826204	GEHÄUSE DARK GREY CTV 262			POS 8	1
:6205	GEHÄUSE WEIß CTV 262			POS 8	1
826206	GEHÄUSE ROT CTV 262			POS 8	1
826214	HALTER FÜR RÜCKWAND	CTV 262		POS 10	2
826215	RÜCKWAND SCHWARZ CTV 262	CHARC.GREY ODER ROT			1
826216	RÜCKWAND HELLGRAU CTV 262	WEIß			1


8
3
2
6
1
9
10
5
10
7
4

BLOCK DIAGRAM



K-9X15BF W/O AUTO-VOLTAGE 31Z5BF01

MAIN P.C. BOARD

IC001 34300N4

IC003 LA7910

IC101 TDA6222

IC401 TDA1904

IC801 M50560-001P

IC004 KA33

IC005 L7805CV

SAW101

TUNER

HANDSET DIAGRAM
P/N : HS01-010126-00

SW001 PR+ / SW002 PR- / SW003 VOL+ / SW004 VOL- / SW009 AS+ / SW008 PRESET / SW010 FAS / SW005 PIC / SW006 PIC+ / SW007 PIC-

H001

CN401 8Ω/3W

CN002

CN602

SW601 POWER SWITCH

AC 120~250V

64µs | 1 3V P-P | 64µs | 2 120V P-P | 3

OTVC Axxion AX5014, AX5020

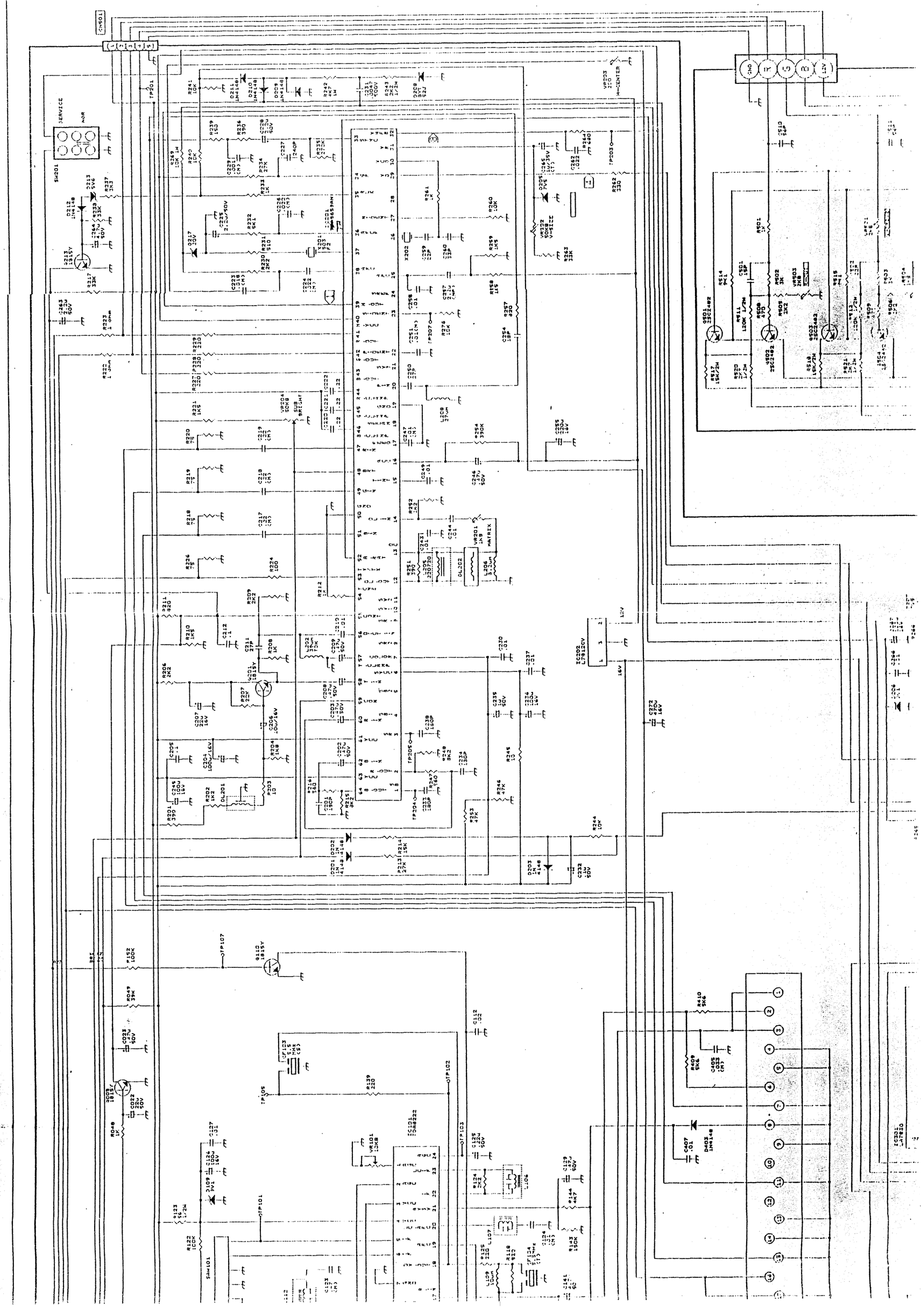
Tranzystory		
Typ	**Opis-Parametry**	**Odpowiedniki**
2SC1815	Si; npn; uni, 60V, 0.15A, 0.4W, >80MHz	BC237, BC86, BCY65E, BC190, BC174, 2SC3330
2SC1015	Si; npn; UHF-pow, 40V, 3A, 14W	2N5946, BLW44, BLW15, 2SC2183, 2SC2083
2SC2717	Si; npn; TV-IF	BF115, 2N3856, BF224, 2SC2210, 2SC1675
2SD1545	Si; npn; TV-HD, 1500V, 5A, 50W	BU908, 2SC2928, 2SD350, BU508, 2SD820
2SC2335	Si; npn; AF/s-pow, 500V, 7A, 40W	BUW41A, BUT56, 2SC2898, MJE13007, SGSF341, 2SC3039
2SD1555	Si; npn;+diode,TV-HD, 1500V, 5A, 50W	BU508D, BU800, 2SD1172, 2SD1174, 2SD1651
2SC2482	Si; npn;Vid, TV-HD-dr, 300V, 0.1A, 0.9W	BF259, BFR59, BFS89, 2N5058, MJE2361T, PE155
2SC2492	Si; npn; AF/s-pow, 120V, 10A, 100W, 70MHz	2SD1487, 2SC2523, 2SD1046, 2N5633

HANDSET DIAGRAM
P/N : H501-010126-00

P.C.B NO : 58AA-88148A-0X

SERVICE PRECAUTION: THE AREA ENCLOSED BY THIS LINE (——) IS DIRECTLY CONNECTED WITH AC MAIN VOLTAGE.WHEN SERVICING THIS AREA, CONNECT ISOLATING TRANSFORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAZARD OF ELECTRIC SHOCK.

1	3V	P-P	2	120V	P-P
3	1050V	P-P			


CN501
SERVICE
NOR
SW201
TP201
IC202 L7912CV
IC201 L4781D
SAW101
X201
X202
X301
X302
VR101 10KB
VR201 1KB
VR202 50KB
VR203 50KB
VR204 50KB
VR205 50KB
VR122 50KB V-SIZE
VR123 33K
DL201
DL202
L201
L202
L203
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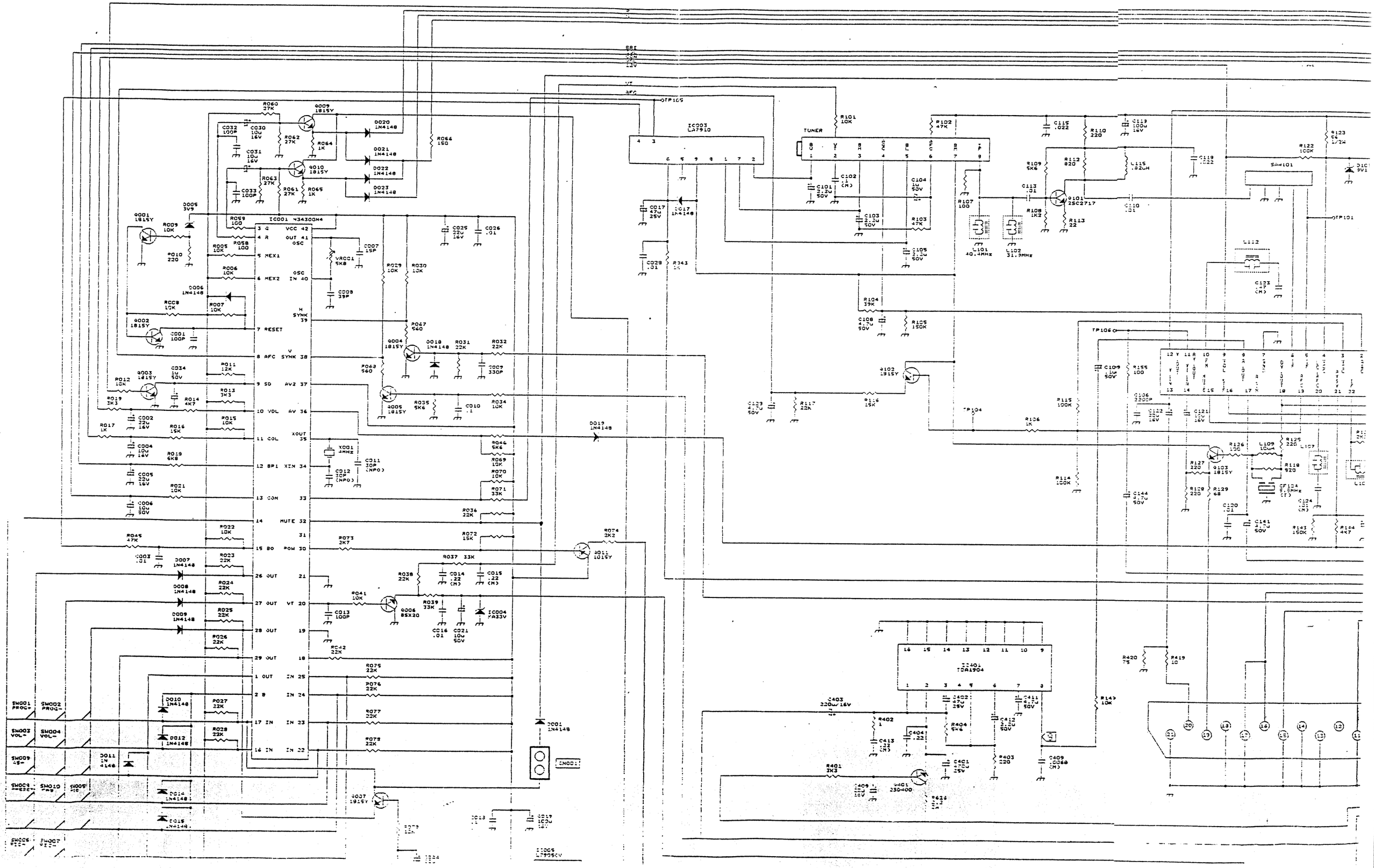
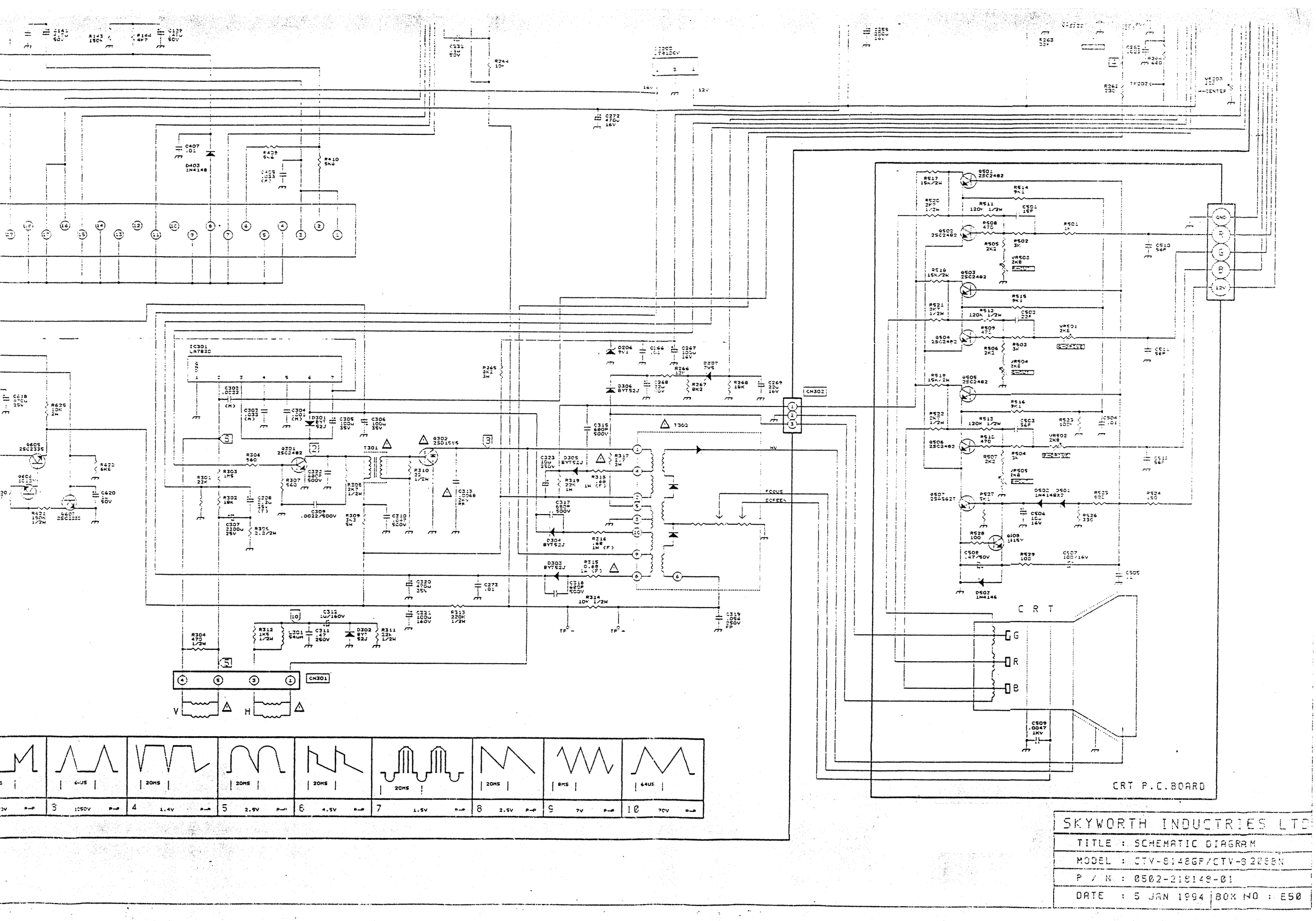
L240

MAIN P.C.BOARD





SKYWORTH INDUCTRIES LTD	
TITLE : SCHEMATIC DIAGRAM	
MODEL : CTV-8146GP/CTV-8208N	
P / N : 0502-218148-01	
DATE : 5 JAN 1994	BOX NO : E50